

I claim:

1. A self controlled, self contained, gear driven differential, having continuous drive means for each output shaft, said differential comprising a conventional planetary differential gear, and at least one, new planetary differential gear, said differential including:

a differential gear housing (8) that is drivable rotatively, freely rotatable planet. gears (13, 14) mounted in the housing for axial and radial rotation therewith, and differential, side bevel gears (11, 12) mounted in the said housing and meshing with the said planet gears (13, 14) all being freely rotatable within the said housing (8), and one side bevel gear 12, being stationary to one axle shaft (5), said axle shaft (5) being independent rotative to said differential housing (8):

and said at least one new planetary gear including: two sun gears, at least one planetary gear, and a support structure (6, 7, 15, 16, 9):

wherein:

(a) said support structure (9), independently rotative of any other housing of the said differential, and said support structure supporting the said at least one planetary gear (15, 16), the support structure being axially stationary to an output shaft, and the said support structure being rotative along the central axis of the said differential, being axially supported by way of the differential, and the support structure being axially

- stationary to the remaining side bevel gear (11)
- (b) two sun gears (6, 7) along the axis of the said support structure (9), being centerposed therein, the said sun gears being independantly rotative of the support structure, and of each other, being supported additionally by way of the support structure; and
- (c) said at least one planetary gear (15, 16) orbitally engage to the said sun gears (6, 7), the planetary gear(s)'s axes parallel to the axis of the said support structure, being rotatively stationary to the support structure, supported by the support structure away from the central axis.
8. A new planetary differential gear as in claim 7, said at least one new planetary gear including: two sun gears, at least one planetary gear, and a support structure (6, 7, 15, 16, 9):

wherein:

- (a) said support structure (9), independantly rotative of any other housing of the said differential, and said support structure supporting the said at least one planetary gear (15, 16), the support structure being axially stationary to an output shaft, and the said support structure being rotative along the central axis of the said differential, being axially supported by way of the differential and the support structure being axially stationary to the remaining side bevel gear (11)

- (b) two sun gears (6,7) along the axis of the said support structure (9), being centered therein, the said sun gears being independently rotative of the support structure, and of each other, being supported additionally by way of the support structure; and
- (c) said at least one planetary gear (15,16) orbitally engage to the said sun gears (6,7), the planetary gear(s)'s axes parallel to the axis of the said support structure, being rotatively stationary to the support structure, supported by the support structure away from the central axis.

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